

# Symons's Meteorological Magazine.

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## WEATHER MAPS IN NEWSPAPERS.

On January 1st the *Morning Post* commenced the publication of the daily weather chart prepared by the Meteorological Office from the 6 p.m. observations. The area included extends from Iceland in the north-west to Corsica in the south-east, the British Isles having a central position and the west of continental Europe, from Scandinavia to the Pyrenees being shown. Isobars are given for intervals of 5 millibars, and the lines are numbered at one end with the pressure in millibars, at the other with the height of the mercurial barometer in inches and hundredths. As the map extends across two columns it is very clear and legible, a great advance on any previous presentation of a weather chart in a British newspaper.

In introducing the new feature the *Morning Post*, under the heading of "A fascinating daily study," started a series of meteorological articles with the happy quotation from Ruskin :—

"While the geologist yearns for the mountain, the botanist for the field, and the mathematician for the study, the meteorologist like a spirit of a higher order than any, rejoices in the kingdom of the air."

The writer understands that a new era in public appreciation of meteorology began with the armistice, and he says : "In all educational establishments, from the Universities, through the Training Colleges, down to the elementary schools, familiarity with the daily Weather Map, and its indications, has now become an imperative necessity. Lectures based upon the many erroneous theories of pre-Weather Map days which are found in most text books, and illustrated by diagrams of a generation or half a century ago, are out of date—they are the dried-up, lifeless bones out of which there comes no sustenance. What is now required is the living thing, something that appeals to and interests the scholar because he feels that he is being taught to appreciate what he is experiencing at the moment. This living thing is the Weather Map which a very large proportion of the readers of the *Morning Post* will have served up with breakfast every morning, and in more distant regions by mid-day."

The spirit of this paragraph is that spirit of triumphant hope that "springs eternal" from the ashes of the past. It has now a better opportunity than ever before to be justified by the spread of knowledge. We welcome the enthusiasm with which the *Morning Post* has inaugurated the teaching of weather-lore to its readers. Our readers, of course, know that the value of the weather map was known and appreciated even a generation ago and this fact makes them the happier for every fresh recognition.

We were alarmed, fortunately without reason, when *The Times* failed to resume its familiar discussion of the weather; but in due course the new large-scale weather map began to appear in its columns also, though the absence of shading to distinguish land from water makes it at first sight less effective than that in the *Morning Post*. We cannot forget that it is due to the enterprise of *The Times* that weather maps first appeared in a daily paper; nay more, that it is to that journal we owe the first construction of a 6 p.m. map by the Meteorological Office. This is now an old story, but it is worth while to remember that for a time more than forty years ago, the cost of the 6 p.m. weather report was borne by a newspaper. *The Times* report before the war made a feature of a natural-scale diagram showing the hourly readings of the great glycerine barometer which was one of the peculiar glories of Printing House Square. When a rapid rise or fall of pressure occurred half a column or more was filled with this diagram and we can hardly wonder that it has been suppressed. The space is more usefully occupied by a special report on Aviation Weather.

The superior clearness and larger scale of the new weather maps respond worthily to the impulse which the war has given to Meteorology in all its aspects: but a tribute of affectionate memory is due all the same to the rough and ugly little maps that headed *The Times* weather column until 1914. When the isobaric map first appeared it was a small journalistic triumph, for in those days there were no cheap and easy photographic processes for reproducing drawings to print with type, and students of forty years ago remember how this map of the weather appealed to them when they saw it for the first time. Out of fashion and grotesque as the little map would now appear it possessed one advantage which its up-to-date successor lacks: it was just the right size to trace off as a lantern slide, and many University Extension and Gilchrist Trust lecture audiences have seen the weather map published that morning filling a 20-foot screen. Old lecturers on the weather must regret the old map for this reason alone, for they have often traced the isobars by scraping out the lines on a blue waxed plate a few minutes before the lecture began in some remote village where the London newspapers are not delivered until the evening, and made a slide of it by binding the tracing to a cover-glass prepared in advance with the outline of the British Isles in black. The *Morning Post* articles to which we

have referred show that the appeal of "Earth's young significance" still rouses the same enthusiasm which fired those whose efforts to popularize meteorology in the later decades of last century were helped by the old *Times* map. Though we do not wish it back, we retain some gratitude for the enterprise which started it and kept it going during the period of popular indifference, which we trust, has now passed away for ever.

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### Correspondence.

*To the Editor of Symons's Meteorological Magazine*

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#### THE SNOWSTORM OF JANUARY 4th AND 5th.

IN this country a very low barometer in a winter month, especially, perhaps, in January, when the general level of temperature is at a minimum generally means cold and snow, except when and where a long-distance north-west current from the Atlantic may be transporting warmth. In the little cyclonic depression which moved north-eastward across England from France on the evening of January 3rd, becoming deeper, larger and more intense as it progressed there was no warm current in the circulation at all; but the temperature on the night of the track where the wind was from southerly points, was just high enough to permit of a heavy fall of rain in Northern France and the south-east of England, in place of a very severe snowstorm which visited the north, midlands and west of England, where the winds were from northerly points on the left of the track. The meteorological circumstances of this storm are most interesting, and it is to be hoped that it may be found possible to show on a map the distribution of snow and rain. It is probable that in Kent, Surrey and Sussex, where the temperature was only just high enough for rain, the elevated tracts of country approaching 1,000 feet above the sea, would stand out as altitudinal outlines of the snowfall which in the parts of England lying further west and north was very deep in the lowlands. The experiences of travellers on the Great Western Railway would be interesting if known. Assuming that the transition zone between rain and snow was somewhere in the neighbourhood of Reading, where the fields would be looking grey, a little further west the White Horse Hills would appear as altitudinal outlines of the deep snow which farther west, still in Wilts and Somerset, was lying in the lowlands. Apparently Cornwall in the extreme west lay for the most part outside the area of the storm. There is no doubt that the altitudinal outlines of this heavy lowland snowstorm would be highly instructive could they be depicted on a map.

L. C. W. BONACINA.

*January, 11th 1919.*

## A WINTER THUNDERSTORM.

A THUNDERSTORM started on January 10th, at 7 p.m., with a very vivid flash, followed by others at 7.5 and 7.8 p.m.; the first thunder being at 7.8 p.m. Intermittent flashes, with and without thunder, were continued at intervals till 9.45 p.m. Hail fell in large quantities and heavy rain. The wind, which was very light, was from the south-west, and rain continued the whole night.

HAROLD R. PINK.

*The Mount, Farcham, January 11th, 1919.*

## REMARKABLE UNIFORMITY OF TEMPERATURE.

For the last ten days, January 28th to February 6th inclusive, the range of temperature here has amounted to only 9°·3. During this period the ground has been snow-covered to the depth of about 3 inches, the sky densely overcast, with frequent falls of snow, the wind light from north to east. The following are the maximum and minimum temperatures in the screen :—

		Max.	Min.			Max.	Min.
January	28th	35°·5	30°·5	February	2nd	32°·5	29°·2
"	29th	36°·0	28°·7	"	3rd	33°·2	30°·0
"	30th	32°·0	31°·0	"	4th	35°·5	30°·0
"	31st	30°·5	26°·7	"	5th	35°·0	30°·0
February	1st	32°·2	27°·0	"	6th	35°·5	30°·7

H. K. G. ROGERS.

*Glenart, Weybridge, February 6th, 1919.*

## Mr. William Allingham.

WE have to record, with regret, the sudden death, on January 24th, of Mr. William Allingham, for many years Principal Assistant in the Marine Branch of the Meteorological Office. Mr. Allingham's early life was spent at sea, but, owing to a disabling accident, he obtained, in the early seventies, a post in the Admiralty, while in 1875 he was transferred, at the age of twenty-five, to the Staff of the Meteorological Office. In addition to a practical knowledge of Navigation and Meteorology Mr. Allingham was gifted with considerable literary ability. His chief works were the compilation of a *Manual of Marine Meteorology*, and, in conjunction with Captain Wilson-Barker, Commander of H.M.S. *Worcester*, a valuable treatise on *Navigation, Practical and Theoretical*. He edited the later editions of Lecky's *Wrinkles in Practical Navigation*, and was an active contributor to various magazines and journals, among which may be mentioned *The Nautical Magazine*, *The Syren*, and the *Liverpool Journal of Commerce*.

F.J.B.

## ROYAL METEOROLOGICAL SOCIETY.

THE Annual General Meeting of this Society was held on January 15th, at Burlington House, Sir Napier Shaw, F.R.S., President, in the Chair. The report of the Council for 1918 was read and adopted, and the Council for 1919 was duly elected, as follows :—

*President* : Sir Napier Shaw, D.Sc., LL.D., F.R.S. ; *Vice-Presidents* : T. W. Backhouse, Francis Druce, Capt. A. J. Walker, F. J. W. Whipple ; *Treasurer* : W. Vaux Graham, C.E. ; *Secretaries* : W. W. Bryant, J. S. Dines ; *Foreign Secretary* : R. G. K. Lempfert ; *Councillors* : C. E. P. Brooks, Capt. C. J. P. Cave, R.E. ; J. E. Clark, Capt. G. M. B. Dobson, Lieut.-Col. E. Gold, D.S.O., R.E., Lieut. H. D. Grant, R.N.V.R., R. H. Hooker, Lieut.-Col. H. Mellish, C.B., Carle Salter, W. Sedgwick, Maj. G. I. Taylor, R.F.C., Prof. H. H. Turner, D.Sc., D.C.L., F.R.S.

Sir Napier Shaw, in an address on "Meteorology : the Society and its Fellows," referred to the change in the position of meteorological work during the war from that of a subject of curiosity which might safely be left to take its chance with such facilities as were left to the ordinary public inexperienced censors and controllers, to that of a matter of such importance in gunnery and navigation of the sea and air that all reference to it was rigorously excluded from the newspapers and a number of special services were improvised to meet the need of meteorological information for our own forces acting in co-operation with corresponding organisations for the French, American and Italian forces. To meet the demand for information about the fundamental principles and practice of the modern science, necessary for those who were called upon to take up technical duties with very limited training, the Meteorological Office had issued a number of books specially written for the purpose. Looking forward, he said that the immediate necessity was the organization of the meteorological services to satisfy the demands of the home countries and meet possible requirements of the dominions beyond the seas. The essential conditions of the organisation were first that there should be a career for men of ability, and secondly that there should be opportunity for suitable preparation by preliminary training in scientific studies, including meteorology, at the universities. At the same time, efficient organization of the public service required that the regular collection of information about the weather should be placed on a proper footing, by arrangement between the central authority and local authorities. The duty which the Society should discharge in the changed conditions was to foster or create an atmosphere which would make a satisfactory national organization on those lines possible by the interchange of ideas and the discussion of meteorological subjects. The steps towards this object would be the continued improvement of the Quarterly Journal of the Society, as a

medium of communication between the fellows, and the development of the use of the library as a reservoir of information. The position of the fellows in relation to the subject would be somewhat changed when the maintenance of the public memory of the weather came to be undertaken as a national duty. But the number of opportunities open to them for active personal co-operation in the development of meteorology, which had not hitherto been fully utilised, was very large. It included observations of special character such as those with self-recording instruments, including the photographic camera, co-operation in making known the progress of the science in other countries, the study of weather in ancient and modern literature and the presentation of a series of episodes in the long history of meteorology and, principally, the setting out of the experience of past and present study in such a way as to create and stimulate the desire for new knowledge upon which the progress of the science must rest.

The following gentlemen were balloted for and elected fellows of the Society :—Capt. J. W. Farnell, Sec.-Lieut. G. F. Henderson, Sec.-Lieut. R. S. Read, Mr. R. Stanley-Davies, Capt. N. B. Weekes, Lieut. F. C. Wood.

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## METEOROLOGICAL NEWS AND NOTES

DEW POND CONSTRUCTION was described in some detail in a lecture before the Royal Institute of British Architects on February 3rd by Mr. G. Hubbard, F.S.A., who maintained that it was possible to obtain a water-supply in the absence of springs, rivers and rain, and described an extremely interesting and successful experiment carried out by himself in this connection.

THE NORFOLK RAINFALL ORGANIZATION'S complete monthly rainfall tables, publication of which had been interrupted for some time owing to war conditions, are being resumed in the *Eastern Daily Press* from the beginning of the current year.

PRIZES FOR WEATHER ESSAYS offered to Enfield school boys and girls are announced by the *Enfield Gazette* of January 10th, 1919. The annual prize for 1918 had unfortunately to be withdrawn owing to the Censor's restrictions.

ERRATA.—In this Magazine for January, 1919, page 138, last two lines of table :—*for 4 years read 14 years.* Page 139, first line of Mr. Kitchener's letter :—*after 18h. 20m. insert on December 18th.*

## METEOROLOGY DURING AND AFTER THE WAR.

A LECTURE on this subject was delivered at the Royal Society of Arts on January 22nd, by Colonel H. G. Lyons, R.E., D.Sc., F.R.S., Acting-Director of the Meteorological Office. The chair was taken by Sir Napier Shaw, D.Sc., F.R.S., Meteorological Adviser to the Government.

Colonel Lyons said that the conditions prevailing at the commencement of hostilities were favourable for the advancement of meteorology. At that time, however, there was hardly a career open as a professional meteorologist, and most men working on meteorology were doing so as a hobby. Much valuable research had been carried out, and many difficulties of forecasting were being swept away. The investigation of the upper atmosphere by kites and pilot balloons had made considerable strides. As a result of the war some of this work had to be abandoned, some new work taken up, and the difficulties of carrying on the vastly increased routine of the Meteorological Office with a depleted staff became a serious problem. The cessation of wireless reports, the absence of meteorological information from Central Europe, and the censorship of letters and telegrams added to the difficulties. The need for information from wider areas was soon appreciated and telegraphic reports are now received from Spitzbergen, the north coast of Africa, the Azores and Central Russia. It was thus possible to form a very fair idea of the weather prevailing over the Central Empires. Increased demands for forecasts from the Admiralty and the Royal Air Force led to the institution of a continuous 24-hour forecast service based on reports at 1 a.m., 7 a.m., 1 p.m. and 6 p.m. Telegraphic reports were transmitted to General Headquarters in France for the use of the Allied Armies. A freely expressed wish of aviators and others for reports devoid of all technical terms resulted in the issue of an early morning report based on observations at 1 a.m. and containing a simple description of the prevailing conditions with a forecast. A fuller report was issued on the 7 a.m. observations, and another on the 1 p.m. observations. This was supplemented, for purposes of the General Staff, by a summary of the conditions prevailing on the various fronts and of the anticipated conditions. The present and probable conditions over the Central Empires were also deduced. The highly confidential nature of the work necessitated the use of cypher codes. The loss of Zeppelins in February, 1915, and October, 1917, as well as numerous occasions when they ran into bad conditions and had to return, lend support to the belief that the enemy was kept ignorant as to weather conditions over Western Europe.

The demands of the Special Brigade for trained meteorologists led to the formation of the Meteorological Section of the Royal Engineers in 1915. The Section began with four officers and twenty



other ranks, and at the close of hostilities had increased to five times that number with units at all Army Headquarters, and a force in Salonika. The Section advised aviators as to upper air conditions and the Artillery as to gun-ranging corrections. In addition to the Military Service, the Meteorological Section of the Royal Air Force and the Admiralty Meteorological Service had achieved fine results.

Colonel Lyons maintained that co-operation in the future would be essential to obtain the best results. The most rapid means of transmission of reports are necessary for the forecaster, and the greater use of wireless telegraphy might be confidently looked for. Strict uniformity in regard to instruments, practice and method were needful. There were about 1,000 well-equipped meteorological stations throughout the Empire and free access to the accumulated data should be possible.

H.E.C.

### SCOTTISH METEOROLOGICAL SOCIETY.

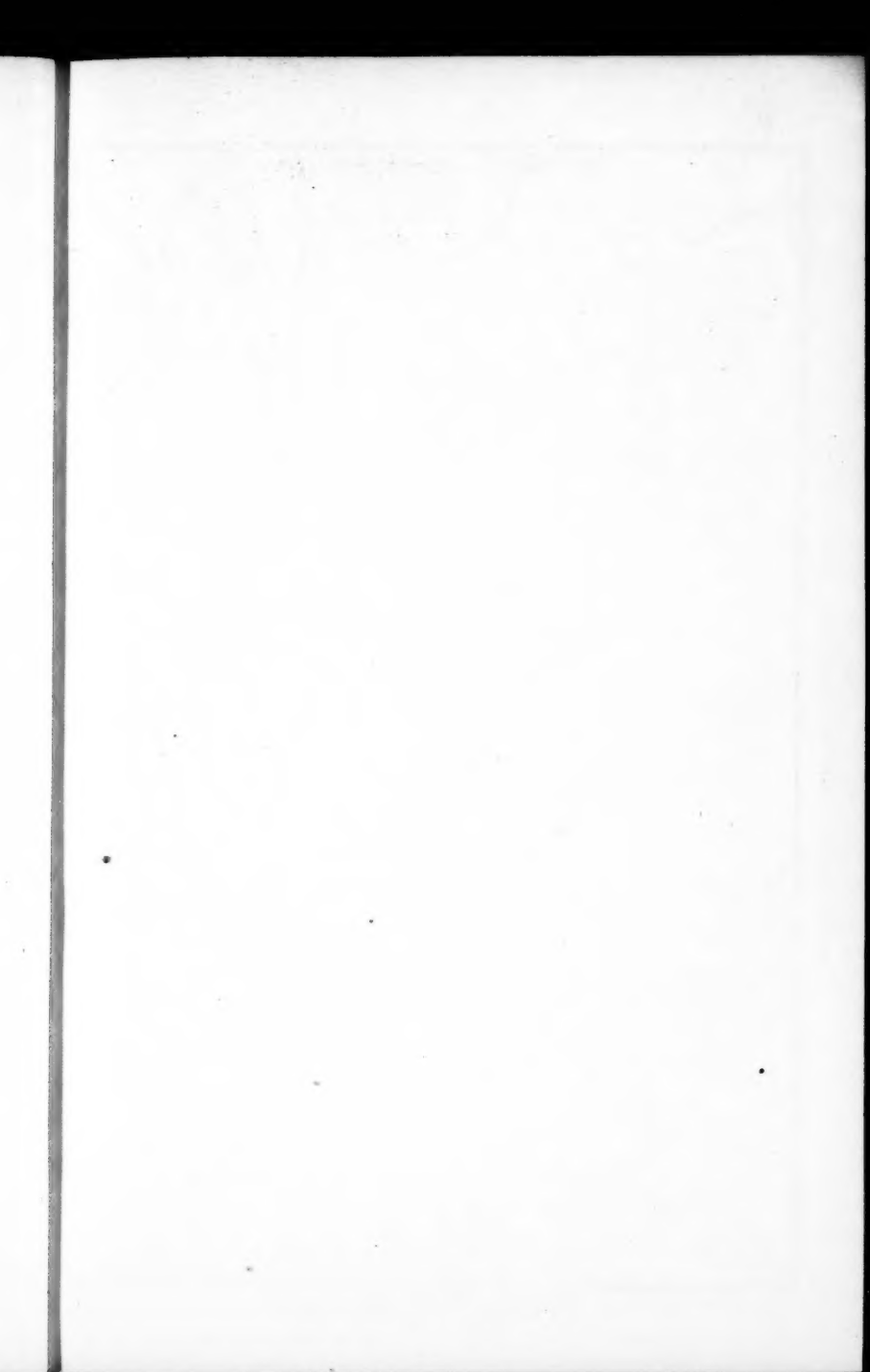
THE Annual Business and General Meeting of the Society was held on December 19th, 1918, in the lecture hall of the Royal Society of Edinburgh, Professor R. A. Sampson, F.R.S., and, afterwards, Dr. C. G. Knott, in the Chair.

The report from the Council referred to the great strain imposed by war conditions on the voluntary system of climatological observations, and to the importance of rainfall work. There had been a slight shrinkage in the membership list, but, during the past four very trying years, the loyalty of the members had been conspicuous.

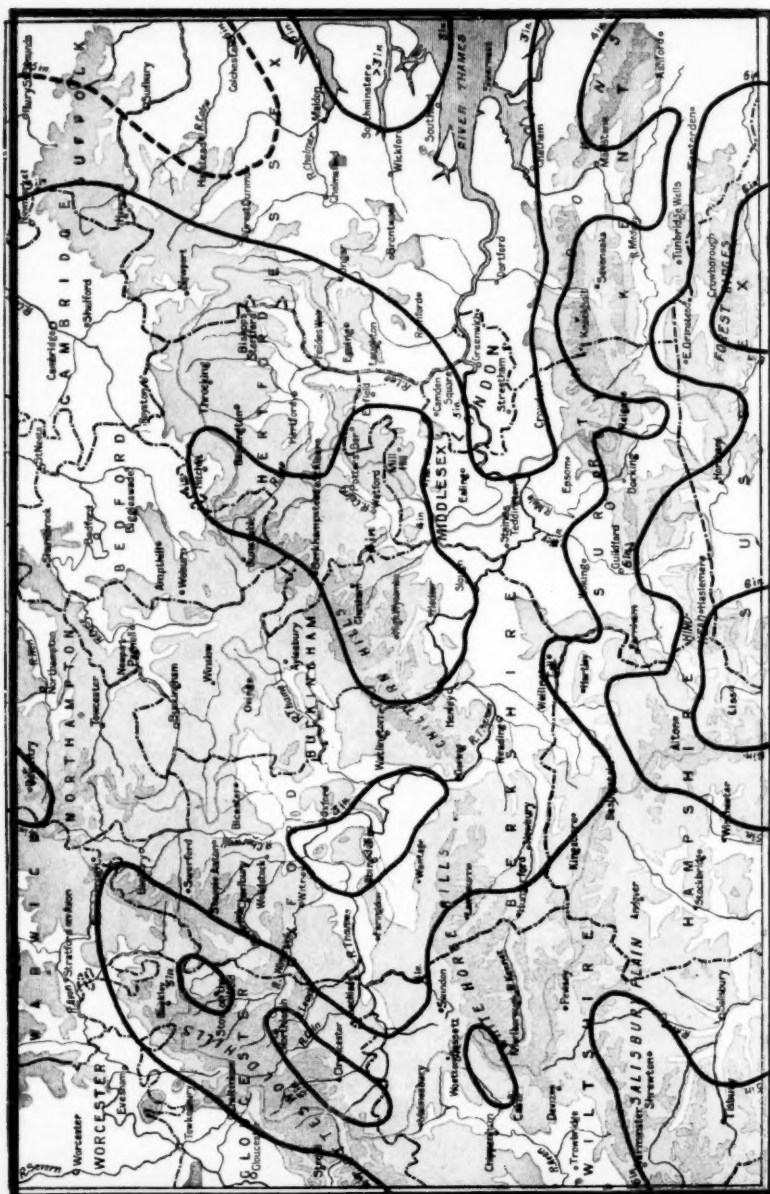
The following Council and Office-bearers were elected for the ensuing twelve months :—*President* : Dr. C. G. Knott ; *Vice-Presidents* : Prof. T. Hudson Beare, and Mr. J. Mackay Bernard ; *Council* : Mr. D. A. Stevenson, Mr. R. Cross, Mr. S. B. Hog, Mr. G. Thomson, Dr. A. Crichton Mitchell, Mr. G. A. Mitchell, Mr. M. M'Callum Fairgrieve, Prof. R. A. Sampson, F. R. S., Capt. T. Bedford Franklin ; *Honorary Secretary* : Capt. E. M. Wedderburn, R.E. ; *Honorary Treasurer* : Mr. W. B. Wilson, W.S.

Prof. R. A. Sampson, F.R.S., in a paper on "Microbarometers," communicated some critical and historical notes, discussing early microbarometers, the Royal Society of London's water barometer, Hooke's Wheel barometer, Dines's and Casella's barographs and the Shaw-Dines leak barograph. The paper pointed out the importance of studying simultaneous traces upon a sufficiently large scale, of the different meteorological elements. An instrument with an extremely small leak and of remarkable sensitiveness was in use at the Royal Observatory, Edinburgh, and an exhibit was made of some of its records and the simultaneous pressure-tube anemograms.





# THAMES VALLEY RAINFALL JANUARY, 1919.



ALTITUDE SCALE Below 250 feet 250 to 500 feet 500 to 1000 feet Over 1000 feet

SCALE OF MILES 0 1 2 3 4 5 6 7 8 9 10

## THE WEATHER OF JANUARY.

THE flow of Atlantic depressions, which was in operation in December, continued throughout the first three weeks of January. The weather remained therefore in an exceedingly unsettled state, and, owing to a change in the tracks pursued by the various storm systems, its general character was of a more wintry type. In December the centres of depressions had kept as a rule outside our Atlantic seaboard, so that the winds in these islands were mostly from between south and west. In January the storm centres came more immediately over the country and the mild south-westerly wind was therefore interspersed not infrequently with cold winds from some northerly quarter. The most important depressions were those of the 1st, 2nd, the 6th and the 9th, the wind rising on each occasion to the force of a gale in many districts. On the 2nd, the westerly gusts blew with a velocity of 69 miles per hour, at Holyhead, and 85 miles at Southport; while on the 6th the wind exceeded a velocity of 65 miles in several parts of our west and south-west coasts, and reached 78 miles at Pendennis Castle (Falmouth). Between the 3rd and 4th heavy snowstorms were experienced in the west and north of England, causing, locally, considerable interruptions to traffic. During these three weeks of disturbed weather the mean temperature over England was slightly above the average, and no frosts of any great consequence were reported. In Scotland, the air was much colder, sharp frost occurring on the nights of the 6th, the 12th and the 18th; on the last-mentioned occasion the sheltered thermometer fell to 15°, at Balmoral, and 17°, at West Linton, and Eskdalemuir.

The cyclonic period ended between the 26th and 28th with the movement of a depression which came from Iceland and travelled in a south south-easterly direction across Great Britain and France. In its rear strong northerly winds set in, and, on the 27th, heavy snowstorms occurred in many districts, as far south as Hertfordshire. Sharp frost was experienced the same night in Scotland, the thermometer falling to 13° at West Linton and 14° at Kilmarnock. A large anticyclone now developed in the far north, its borders eventually spreading southwards over a large part of Great Britain. Cold winds from east or north-east therefore became general, with sharp wintry weather and occasional falls of snow in many English districts; on the 31st the temperature at a number of the inland stations failed to reach the freezing point all day.

Over the eastern half of the United Kingdom the total duration of bright sunshine was below the average, but in the west there was a fairly general excess. At Richmond (Kew Observatory), the aggregate was little more than half the amount at Bidston, and less than half the amount at Falmouth and Valencia (Cahiriveen).

The rainfall was generally above the average, the excess being most marked in the south-east of England, where more than twice the average amount fell over a wide area. The only appreciable deficiency occurred in the Scottish Highlands, where about 70 per cent. of the average fall was registered at many stations and only 57 per cent. at Fort William. The fall was normal in the south of Ireland, but above the average to the north of Munster. Less than 3 inches fell along the east coast of Great Britain from the Thames to the Firth of Fife, as well as in the extreme north of Scotland and in Dublin. The fall exceeded 6 inches in large areas in Sussex and Hampshire, in the mountains of Wales and Scotland, and in the south-west of Ireland. Part of the English Lake District had more than 10 inches.

The general rainfall expressed as a percentage of the average was:—England and Wales, 155; Scotland, 94; Ireland, 122; British Isles, 124.

In London (Camden Square) the mean temperature was 37°·8 or 0°·7 below the average. The duration of sunshine was 11·5 hours. The duration of rainfall, 89·7 hours, was the highest for January in the 39 years for which records have been kept. Only twice before, in 1912 and 1915, has rain fallen for more than 80 hours in January. There was no recorded evaporation during the month.

## RAINFALL TABLE FOR JANUARY, 1919.

STATION.	COUNTY.	RAINFALL.						
		Aver. 1875- 1909, in.	1918. in.	Diff. from Av. in.	Per cent. of Av.	Max. in 24 hours.		Nos. of Day
						in.	Date.	
Camden Square.....	London.....	1.83	3.22	+1.39	176	.41	27	22
Tenterden.....	Kent.....	2.14	4.93	+2.79	230	.84	10	23
Arundel (Patching).....	Sussex.....	2.59	6.13	+3.54	236	.74	28	23
Fordingbridge (Oaklands)...	Hampshire.....	2.67	5.99	+3.32	224	.92	3	24
Oxford (Magdalen College)...	Oxfordshire.....	1.78	2.85	+1.07	160	.71	3	22
Wellingborough (Swanspool)...	Northampton.....	1.90	3.76	+1.86	198	.77	3	23
Bury St. Edmunds (Westley)...	Suffolk.....	1.70	2.67	+ .97	157	.46	1	20
Geldeston [Beccles].....	Norfolk.....	1.53	2.98	+1.45	195	.56	5	25
Polapit Tamar [Launceston]...	Devon.....	3.59	6.46	+2.87	180	.81	6	25
Rousdon [Lyne Regis].....	".....	2.94	5.37	+2.43	183	.76	19	22
Stroud (Field Place).....	Gloucester.....	2.33	3.07	+ .74	132	.79	15	12
Church Stretton (Wolstaston)...	Shropshire.....	2.51	3.47	+ .96	138	.47	1	21
Boston.....	Lincoln.....	1.54	2.94	+1.40	191	.48	3	24
Worksop (Hodsock Priory)...	Nottingham.....	1.70	3.00	+1.30	177	.92	3	20
Mickleover Manor.....	Derbyshire.....	1.95	3.60	+1.65	185	1.10	3	20
Congleton (Buglawton Vic.)...	Cheshire.....	2.26	2.92	+ .66	129	.37	3	23
Southport (Hesketh Park)...	Lancashire.....	2.55	4.17	+1.62	164	.45	1	23
Wetherby (Ribston Hall)...	York, W. R. ....	1.89	3.37	+1.48	178	.73	4	15
Hull (Pearson Park).....	" E. R. ....	1.70	3.02	+1.32	178	.58	3	19
Newcastle (Town Moor)...	Northland.....	1.90	2.89	+ .99	152	.55	4	21
Borrowdale (Seathwaite)...	Cumberland.....	13.44	13.00	- .44	97	...	...	...
Cardiff (Ely).....	Glamorgan.....	3.65	5.74	+2.09	157	.89	1	25
Haverfordwest.....	Pembroke.....	4.69	6.25	+1.56	133	.70	13	25
Aberystwyth (Gogerddan)...	Cardigan.....	3.91	5.66	+1.75	145	.55	28	24
Llandudno.....	Carnarvon.....	2.51	2.76	+ .25	110	.39	9	26
Cargen [Dumfries].....	Kirkcudbright.....	4.10	4.01	- .09	98	.65	2	23
Marchmont House.....	Berwick.....	2.40	4.06	+1.66	169	.81	4	21
Girvan (Pinmore).....	Ayr.....	4.78	5.16	+ .38	108	.85	2	27
Glasgow (Queen's Park)...	Renfrew.....	3.53	3.59	+ .06	102	.74	2	20
Islay (Eallabus).....	Argyll.....	4.78	6.89	+2.11	144	1.08	1	26
Mull (Quinish).....	".....	5.55	5.43	- .12	98	.97	23	24
Loch Dhu.....	Perth.....	9.20	6.55	-2.65	71	.95	13	19
Dundee (Eastern Necropolis)...	Forfar.....	2.01	2.60	+ .59	129	.80	1	22
Braemar.....	Aberdeen.....	2.92	2.68	- .24	92	...	...	...
Aberdeen (Cranford).....	".....	2.36	3.29	+ .93	140	.65	20	21
Gordon Castle.....	Moray.....	1.99	3.96	+1.97	199	...	...	...
Drumnadrochit.....	Inverness.....	3.63	2.73	- .90	75	.40	4	22
Fort William.....	".....	9.20	5.22	-3.98	57	.70	13	19
Loch Torridon (Bendamph)...	Ross.....	9.42	6.60	-2.82	70	1.09	25	21
Dunrobin Castle.....	Sutherland.....	2.75	1.98	- .77	72	.30	16	13
Glanmire (Lota Lodge).....	Cork.....	4.70	4.74	+ .04	101	.84	6	22
Killarney (District Asylum)...	Kerry.....	5.94	5.95	+ .01	100	.62	13	27
Waterford (Brook Lodge)...	Waterford.....	3.78	4.02	+ .24	106	.45	6	23
Nenagh (Castle Lough).....	Tipperary.....	3.88	3.78	- .10	97	.53	9	21
Ennistymon House.....	Clare.....	4.30	6.66	+2.36	155	.79	13	22
Gorey (Courtown House)...	Wexford.....	3.19	4.52	+1.33	142	.49	4	22
Abbey Leix (Blandsfort)....	Queen's Co. ....	3.15	...	...	...	...	...	...
Dublin (Fitz William Square)...	Dublin.....	2.14	2.64	+ .50	123	.34	4	25
Mullingar (Belvedere).....	Westmeath.....	3.10	3.71	+ .61	120	.50	17	20
Crossmolina (Enniscoe).....	Mayo.....	5.35	6.80	+1.45	127	.98	13	27
Cong (The Glebe).....	".....	4.79	...	...	...	...	...	...
Collooney (Markree Obsy.)...	Sligo.....	3.87	5.31	+1.44	137	.72	13	25
Seaforde.....	Down.....	3.41	4.49	+1.08	132	.62	7	24
Ballymena (Harryville).....	Antrim.....	3.73	4.87	+1.14	131	.70	13	26
Omagh (Edenfel).....	Tyrene.....	3.46	4.63	+1.17	134	.80	13	21

## SUPPLEMENTARY RAINFALL, JANUARY, 1919.

Div.	STATION.	Rain inches.	Div.	STATION.	Rain inches
II.	Warlingham, Redvers Road..	4.65	XI.	Lligwy .....	4.34
"	Ramsgate .....	2.55	"	Douglas, Isle of Man .....	5.27
"	Hailsham .....	5.98	XII.	Stoneykirk, Ardwell House...	4.53
"	Totland Bay, Aston House...	4.81	"	Carsphairn, Shiel .....	7.11
"	Stockbridge, Ashley..	4.82	"	Langholm, Drove Road .....	5.57
"	Grayshott .....	6.56	XIII.	Selkirk, The Hangingshaw..	3.67
"	Upton Nervet .....	3.62	"	North Berwick Reservoir...	3.55
III.	Harrow Weald, Hill House...	3.93	"	Edinburgh, Royal Observaty.	2.06
"	Pitsford, Sedgebrook..	3.68	XIV.	Biggar .....	3.00
"	Woburn, Milton Bryant.....	3.95	"	Maybole, Knockdon Farm ...	3.72
"	Chatteris, The Priory .....	2.57	XV.	Ardgour House .....	7.12
IV.	Elsenham, Gaunts End .....	3.22	"	Shiskine .....	5.36
"	Shoeburyness .....		"	Oban .....	4.46
"	Colchester, Hill Ho., Lexden	2.35	"	Holy Loch, Ardnadam .....	7.13
"	Aylsham, Rippon Hall ....	2.88	"	Loch Venachar .....	5.95
"	Swaffham .....	3.08	XVI.	Glenquey .....	5.40
V.	Bishops Cannings .....	4.12	"	Loch Rannoch, Dall .....	4.00
"	Weymouth .....	5.49	"	Blair Atholl .....	2.31
"	Ashburton, Druid House.....	8.98	"	Coupar Angus .....	2.94
"	Cullompton .....	6.00	"	Montrose, Sunnyside Asylum.	3.23
"	Lynmouth, Rock House .....	6.17	XVII.	Balmoral .....	3.23
"	Okehampton, Oaklands.....	6.59	"	Fyvie Castle .....	3.68
"	Hartland Abbey .....	5.28	"	Keith Station .....	5.89
"	St. Austell, Trevarna .....	6.83	XVIII.	Rothiemurchus .....	2.79
"	North Cadbury Rectory.....	4.91	"	Loch Quoich, Loan .....	11.45
VI.	Clifton, Stoke Bishop .....	4.75	"	Skye, Dunvegan .....	6.28
"	Ledbury, Underdown.....	3.15	"	Fortrose .....	1.72
"	Shifnal, Hutton Grange.....	2.59	"	Glencarron Lodge .....	5.23
"	Droitwich .....	3.27	XIX.	Tongue Manse .....	2.49
"	Blockley, Upton Wold.....	4.75	"	Melvich .....	2.39
VII.	Grantham, Saltersford.....	3.47	"	Loch More, Achfary .....	5.84
"	Louth Westgate .....	3.43	XX.	Dunmanway, The Rectory ..	6.44
"	Bawtry, Hesley Hall .....	2.82	"	Mitchelstown Castle.....	6.02
"	Derby, Midland Railway.....	3.17	"	Gearahameen .....	10.70
VIII.	Nantwich, Dorfold Hall .....	2.04	"	Darrynane Abbey.....	8.16
"	Bolton, Queen's Park .....	4.70	"	Clonmel, Bruce Villa .....	4.63
"	Lancaster, Strathspey .....	4.99	"	Roscrea Timoney Park .....	3.40
IX.	Langsett Moor, Up. Midhope	5.04	"	Broadford, Hurdlestown....	4.88
"	West Witton .....	4.84	XXI.	Enniscorthy, Ballyhyland...	5.23
"	Scarborough, Scalby .....	3.44	"	Rathnew, Clonmannon .....	3.60
"	Ingleby Greenhow .....	3.61	"	Hacketstown Rectory .....	4.49
"	Mickleton .....	2.90	"	Ballycumber, Moorock Lodge	3.11
X.	Bellingham, High Green Manor	3.98	"	Balbriggan, Ardgillan .....	2.89
"	Ilderton, Lilburn Cottage ...	3.64	"	Castle Forbes Gardens.....	3.78
"	Keswick, The Bank.....	5.69	XXII.	Ballynahinch Castle.....	7.37
XI.	Orton .....	7.05	"	Woodlawn .....	2.17
"	Llanfrechfa Grange .....	6.22	"	Westport House .....	5.59
"	Treherbert, Tyn-y-waun .....	11.71	"	Dugort, Slievemore Hotel ...	7.50
"	Carmarthen, The Friary .....	6.68	XXIII.	Enniskillen, Portora.....	5.45
"	Fishguard, Goodwick Station.	5.53	"	Dartrey [Cootehill] .....	3.98
"	Crickhowell, Tal-y-maes .....	7.50	"	Warrenpoint, Manor House ..	3.98
"	Birmingham WW., Tyrmynydd	6.54	"	Belfast, Cave Hill Road .....	4.65
"	Lake Vyrnwy .....	8.43	"	Glenarm Castle .....	4.78
"	Llangynhafal, Plas Drŵn.....	2.93	"	Londonderry, Creggan Res...	4.22
"	Rhiwbryddir .....	8.06	"	Millford House .....	4.09
"	Dolgelly, Bryntirion.....	5.68	"	Killybegs .....	5.61

## Climatological Table for the British Empire, August, 1918.

STATIONS.	Absolute.				Average.				Absolute.		Total Rain		Aver.
	Maximum.		Minimum.		Max.	Min.	Dew Point.	Humidity.	Max. in Sun.	Min. on Grass.	Depth.	Days.	
	Temp.	Date.	Temp.	Date.									
(Those in italics are South of the Equator.)													
	°		°		°	°	°	0-100	°	°	inches		
London, Camden Square	89·7	22	46·9	30	74·1	54·2	54·7	71	100·5	47·3	1·78	12	6·6
Lagos ... ..	85·2	26	69·0	12	82·5	72·2	70·9	79	145·0	64·0	1·32	10	7·3
Cape Town ... ..	91·2	24	42·8	1	71·3	51·3	49·7	65	...	...	·22	4	2·8
Johannesburg ... ..	71·0	20	33·3	2	60·7	41·3	34·6	65	...	31·0	3·66	6	3·2
Bloemfontein .. ..	73·5	20	26·9	15	64·5	35·9	39·6	73	...	...	1·82	4	2·1
Calcutta... ..	91·6	1	75·1	9	88·4	78·8	78·0	87	...	72·9	10·77	16	4·0
Madras ... ..	104·1	4	74·8	11	97·3	73·9	66·0	71	164·1	71·7	3·06	12	6·4
Colombo, Ceylon ... ..	86·8	3	73·5	5	85·6	77·2	72·8	79	155·4	70·8	2·09	18	8·6
Hongkong ... ..	87·1	25	74·0	3	83·6	76·4	74·8	86	...	...	29·23	20	8·1
Sydney ... ..	75·9	29	42·9	27	65·5	48·8	47·8	75	125·0	36·0	2·51	...	5·6
Melbourne ... ..	65·1	21	31·1	1	59·9	45·3	44·5	73	120·8	23·6	2·73	17	6·6
Adelaide ... ..	69·0	4	36·6	2	61·7	46·1	46·0	74	126·5	28·6	2·63	14	5·6
Coolgardie ... ..	77·0	25	35·5	8	63·6	43·4	40·5	58	140·0	30·0	·67	5	5·9
Brisbane ... ..	78·0	29	45·5	13	72·1	51·1	50·4	66	134·6	40·1	1·24	11	3·5
Hobart, Tasmania ... ..	64·4	27	35·9	20	56·3	43·8	40·0	66	118·6	31·2	3·53	14	6·3
Wellington ... ..	62·7	3	30·5	11	54·9	43·3	41·7	75	124·0	20·6	3·51	13	5·9
Jamaica, Kingston ... ..	94·2	2, 28	69·8	5	90·1	73·6	71·6	77	...	...	2·87	4	4·0
Grenada ... ..	84·0	15	71·0	15a	86·0	75·0	...	76	138·0	...	6·55	16	3·5
Toronto ... ..	102·2	13	47·8	1	81·7	59·6	61·0	79	160·0	42·5	4·15	11	4·4
Fredericton ... ..	86·5	24	39·0	19	74·2	50·3	54·7	74	...	...	1·05	10	4·5
St. John, N.B. ... ..	79·2	20	46·5	28	66·0	53·1	52·3	80	137·0	39·5	1·98	11	8·8
Victoria, B.C. ... ..	80·0	30	48·8	27	67·0	51·9	53·0	82	140·4	39·8	1·78	14	4·2

a-19.

Johannesburg.—Bright sunshine 240·7 hours.

COLOMBO, CEYLON.—Mean temp. 81°·4, or 0°·2 above, dew point 0°·7 below, and E ·54 in. below, averages. Mean hourly velocity of wind 6·3 miles.

HONGKONG.—Mean temp. 79°·5. Bright sunshine 136·7 hours. Mean hourly velocity of wind 12·0 miles.

Melbourne.—Mean temp. one of the highest for past years, and E ·92 in. above average.

Adelaide.—Mean temp. equal to, and E ·13 in. above, averages.

Coolgardie.—Temp. 0°·1 below, and E ·25 in. below, averages.

Brisbane.—Temp. 0°·4 above, and E ·99 in. below, averages. Fog on 15 days.

Wellington.—Mean temp. 0°·7 above, and E 1·06 in. below, averages. Bright sunshine, 149·4 hours.

Cloud.	Aver.
6.6	
7.3	
2.8	
3.2	
2.1	
4.0	
6.4	
8.6	
8.1	
5.6	
6.6	
5.6	
5.9	
3.5	
6.3	
5.9	
4.0	
3.5	
4.4	
4.5	
8.8	
4.2	

low,  
nearly  
above

ight